

BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

December, 2007

CS-69 : TCP/IP PROGRAMMING

Time : 3 hours

Maximum Marks : 75

Note : Question no. 1 is **compulsory**. Answer any **three** questions from the rest.

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1. (a) Compare TCP Model and OSI Model. 4
 - (b) A class B address is assigned the subnet mask of 255.255.240.0. How many hosts are possible per subnet ? How many subnets are possible ? 4
 - (c) How many octets are there in Ethernet hardware address and IPv6 address ? 2
 - (d) Differentiate between connection-oriented and connectionless services. 4
 - (e) Which fields of the IP header change from router to router ? Assume fragmentation occurs. 4
 - (f) In cases where reliability is not of prime importance, UDP would make a good choice. Give two examples in support of it. 4

- (g) Why is host acknowledgement not necessary for the transmission of TCP segment ? 4
- (h) Write short notes on the following : 4
- (i) SNMP
- (ii) SMTP
2. (a) List the fields which are common between TCP header and UDP header. Explain them. 4
- (b) Explain 3-way handshake mechanism used in TCP protocol. 6
- (c) Explain Sliding window protocol in TCP. 5
3. (a) Answer the following questions :
- (i) A host with IP address 108.67.18.70 sends a limited broadcast packet to all hosts in the same network. What are the source and destination IP address used in this case ? 4
- (ii) An organization wants to use the private network number 192.168.90.0 across four subnets. The maximum number of hosts that exist per subnet will be 25. What subnet mask would the administrator use to solve the problem ? 2
- (b) Describe the following fields of the TCP header format : 6
- (i) Sequence number
- (ii) Acknowledgement number
- (iii) Urgent pointer

- (c) How are ARP and RARP similar ? In what way do they differ ? What is the size of an ARP packet when the protocol is IP and the hardware is Ethernet ?

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4. (a) What is an IP subnetwork ? What is the application of it ? In a class B subnet, we know the IP address of one of the hosts and the mask as given below :

IP address : 125.134.112.66

Mask : 255.255.224.0

What is the first address (network address) and the last address (broadcast address) in this subnet ?

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- (b) An IP datagram has arrived with the following information in the header (in HEX) :

45 00 00 54 00 03 00 00 20 06 00 00 7C 4E 03 02 B4 0E 0F 02

20 bytes

6

Answer the following :

- (i) Are there any options ?
 - (ii) What is the size of the data ?
 - (iii) Is the packet fragmented ?
 - (iv) How many more routers can the packet travel to ?
 - (v) What is the identification no. of the packet ?
 - (vi) Is a checksum used ?
- (c) What is DNS ? Briefly explain the three domains of DNS. What is inverse domain ?

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5. Write short notes on :

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- (a) IPv6
- (b) Error control mechanism at TCP layer
- (c) MIME